

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. - 8. (Cancelled)

9. (Currently Amended) A shower plate having a plurality of ejection holes adapted to eject a gas, wherein:

each of the plurality of ejection holes increases in diameter as going outward of the shower plate,

each of the plurality of ejection holes is configured in such a way that a diameter of the ejection hole, on the side where the gas flows out of the hole, is twice or less a plasma sheath thickness (d),

$$d = 1.307 \times \lambda_D \left[\frac{1}{2} \left\{ 1 + \ln \left(\frac{m_i}{2\pi m_e} \right) \right\} \right]^{\frac{3}{4}},$$

wherein m_i and m_e represent a plasma ion mass and an electron mass, respectively, and

$$\lambda_D = \sqrt{\frac{\epsilon_0 k T_e}{n_e e^2}},$$

wherein ϵ_0 represents a permittivity of free space, k a Boltzmann's constant, T_e an electron temperature, n_e a plasma electron density, and e a unit charge.

10. (Previously Presented) A shower plate according to claim 9, wherein a diameter of the ejection hole is changed from the side where the gas flows into the hole toward the side where the gas flows out of the hole.

11. (Previously Presented) A shower plate according to claim 10, wherein the diameter on the side where the gas flows out of the hole is not less than 0.02 mm and is not more than 10 mm.

12. (Currently Amended) A shower plate having a plurality of ejection holes adapted to eject a gas, wherein:

each ejection hole has a portion, on the side where the gas flows into the hole, having a width which is more than 0.5 mm and is not more than 5 mm and a portion, on the side where the gas flows out of the hole, having a width which is not less than 0.02 mm and is not more than 0.5 mm, ~~and wherein~~

each of the plurality of ejection holes increase in diameter as going outward of the shower plate,

each of the plurality of ejection holes is configured in such a way that a diameter of the ejection hole, on the side where the gas flows out of the hole, is twice or less a plasma sheath thickness (d),

$$d = 1.307 \times \lambda_D \left[\frac{1}{2} \left\{ 1 + \ln \left(\frac{m_i}{2\pi m_e} \right) \right\} \right]^{\frac{3}{4}},$$

wherein m_i and m_e represent a plasma ion mass and an electron mass, respectively, and

$$\lambda_D = \sqrt{\frac{\epsilon_0 k T_e}{n_e e^2}}$$

, wherein ϵ_0 represents a permittivity of free space, k a Boltzmann's constant, T_e an electron temperature, n_e a plasma electron density, and e a unit charge.

13. (Previously Presented) A shower plate according to claim 12, wherein said portion having the width which is not less than 0.02 mm and is not more than 0.5 mm has a length of 0.2 mm to 2 mm.

14. (Previously Presented) A shower plate according to claim 13, wherein said shower plate has a thickness of at least 20 mm.

15. (Withdrawn) A shower plate having a plurality of ejection holes adapted to eject a gas, said shower plate wherein a fluctuation in hole diameter of the ejection holes on the side where the gas flows out of the holes is not more than 1% over the entire shower plate.

16. (Withdrawn) A shower plate according to claim 15, wherein the fluctuation in hole diameter of the ejection holes on the side where the gas flows out of the holes is not more than 0.25% over the entire shower plate.

17. (Withdrawn) A shower plate according to claim 9, wherein, of both surfaces of said shower plate, at least the surface on the side where the gas flows out is not a flat surface.

18. (Previously Amended) A shower plate according to claim 12, wherein the peripheral portion of the surface of said shower plate on the side where the gas flows out is projected over the center portion thereof.

19. (Withdrawn) A shower plate according to claim 12, wherein the peripheral portion of said shower plate has a thickness greater than that of the center portion.

20. (Withdrawn) A shower plate according to claim 10, wherein a center axis of at least a portion, on the side where the gas flows out, of each of at least part of said plurality of ejection holes is inclined with respect to a normal of a surface, which is to face an object to be processed, of at least a center portion of said shower plate.

21. (Withdrawn) A shower plate according to claim 20, wherein inclination of said center axis is set such that the gas is ejected from said at least part of said plurality of ejection holes in a direction towards the center of said shower plate and in a direction towards the side where the object to be processed is to be placed.

22. (Withdrawn – Currently Amended) A shower plate according to claim 20 ~~claim 2~~, wherein means for introducing the gas from the exterior to a surface of said shower

plate on the side where the gas flows into said ejection holes is provided at a peripheral portion of said shower plate.

23. - 27. (Cancelled)

28. (Withdrawn) A plasma processing apparatus comprising the shower plate according to any one of claims 9, 12, and 22.

29. (Withdrawn) A product manufacturing method comprising carrying out a process using the shower plate according to any one of claims 9, 12, and 22, thereby manufacturing a semiconductor device.

30. - 31. (Cancelled)

32. (Withdrawn – Currently Amended) A product manufacturing method comprising carrying out a process using the shower plate according to ~~any one of claims 1, 4,~~ and claim 14, thereby manufacturing a liquid crystal display device or an organic EL display device.

33. (Previously Presented) A shower plate according to claim 9, wherein the diameter of said plurality of ejection holes increase in the range of 0.1 to 0.11 mm as going outward of the shower plate.

34. (Cancelled)

35. (Previously Presented) A shower plate according to claim 12, wherein the diameter of said plurality of ejection holes increase in the range of 0.1 to 0.11 mm as going outward of the shower plate.